

**Advanced Software Tools  
for Quality Management  
in the Palm Oil Sector**

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**Paper 8 presented at  
2nd MPOA Seminar  
New Dynamics in global Vegetable Oil Trade  
Kuala Lumpur, 15./16.05.2006**

## **Overview**

- **Introduction**
- **Quality Management - a management goal**
- **IT solutions for Quality Management and traceability systems**
  - **Inspection and certification**
  - **Documentation of primary production**
  - **Traceability across production levels**
- **Conclusion**

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as a Management Goal

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## Introduction

- Organic Services GmbH (located in Germany) is a consultant agency with a long-term experience in quality management, inspection and certification – mainly in the organic sector ([www.organic-services.com](http://www.organic-services.com))
- Organic Services GmbH offers services regarding the implementation of quality management systems (often with support of IT systems)
  - companies (production, processing, trading)
  - inspection and certification bodies
  - accreditation bodies (authorities or companies)
- Organic Services GmbH is the general sales partner of [Intact Consult LMS GmbH](http://www.intact.cc) (Austria) ([www.intact.cc](http://www.intact.cc)) who offers wide and deep knowledge of software solutions regarding quality management

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## A strong network provides services round the world

- Europe
  - Austria
  - Germany
  - Spain
- Australia
- North America
  - U.S.A
  - Canada
- South-/Central America
  - Mexico
  - Brazil
- Asia
  - Malaysia (qa plus asia – pacific sdn bhd)  
([www.qaplusasia.com](http://www.qaplusasia.com))



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## Branches/Standards already implemented

- Fruit and vegetable (pome, stonefruits, citric fruit, banana)
- Grains (all kinds)
- Livestock (meat, eggs, milk)
- Forestry
  
- EurepGAP
- Organic
- Fairtrade
- Other private and legal standards

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## Quality Management as a Management Goal

- Consumer awareness to environmental and social impact on products is increasing.
- Risk assessment implementation for immediate containment of problems
- Implementation of a Quality Management System as prerequisite for traceability.
- ....
- Consequence: broader definition of product quality including questions like:
  - who, where, how has it been produced?  
which off-farm-inputs were used (fertilizer, pesticides, seed etc.)?
  - who, when, where has it been transported/stored?

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## Quality Management, challenge and chance at the same time

### Challenge:

- quality management at all levels (**QM**),
- documentation of processes and procedures (**all levels**),
- training of staff according to different requirements (**QM**),
- data availability (**IT**).

### Chance:

- facilitation of internal and external audits (**QM**),
- no surprises (and nightmares) when a complaint occurs (**QM**)
- strong statements regarding quality and product sourcing addressing the clients and consumer (**marketing**),
- increased credibility and trust by clients and consumer concerning the company label and therefore stronger relationship (**marketing**)
- economic success (**marketing**)

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## Three examples of electronic systems for Quality Management and Traceability

### ■ **Inspection and Certification**

advanced online or offline tools provide audit management and quality transparency

### ■ **Documentation of primary production**

two-level-systems (producers/PMO<sup>1</sup>), specialized in the documentation of off-farm-inputs

### ■ **Traceability across production levels**

multi-level-systems; access by different companies (production, processing, certification) along the product chain

<sup>1</sup> Producer Marketing Organization

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## 1. Inspection and Certification

- An ‘internal’ audit system can help to avoid or reduce costs for external inspection and certification.
- Systems may be run by PMOs themselves, associations or authorities.
- Two different technologies are provided by Intact
  - Client-Server-Application called “e-Cert”
  - Web based system called “Controlnet.EurepGAP”

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- Client-Server-Application
  - LAN
  - offline
- Multiple checklists (standards)
- Advanced management tool for inspection and certification tasks
  - inspection
  - certification
  - correspondence
  - invoicing
  - time control
  - data analysis

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The screenshot shows the e-Cert Software interface for user Gerriets Frank. The 'Fields' tab is selected, showing a tree view of fields under 'Farmer Joe'. Field 556, 'Ext. genutzte Wiesen (ohne Weiden) Winterweizen', is highlighted. The main form displays details for this field: Crop: 100.507 Winterweizen, Main use: checked, Bed name: empty, Area in Ha-A-m²: 0.75, Planting date: 29.10.2004, Harvest/clearing date: 24.07.2005. Below this is a table of raw products to crop/plot.

Name	Yield estimation	Crop yield	Harvest from	Harvest until	Date of planting	harvest on
Winterweizen	2500	0	24/07/2005	24/07/2005	08/12/2005	08/12/2005

Buttons 'Auswahl' and 'Vorschlag uebernehmen' are visible. At the bottom, a table shows certification services:

Services	Pr...	Ce...	certified on	Valid until	Propos...	Organic...	Certifier	Comment	Print
Bio Suisse	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...		Gerriets Frank		
Wint...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...		Zeiser Anna		
Ext...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...		Zeiser Anna		
Wen...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...		Zeiser Anna		
And...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...		Zeiser Anna		
And...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...		Zeiser Anna		
Hoc...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24/03/2005	24/03/20...	Conve...				
EU Bio V...	<input type="checkbox"/>	<input type="checkbox"/>	08/12/2005	01/08/20...					
EurepGa...	<input checked="" type="checkbox"/>	<input type="checkbox"/>	04/05/2005	03/05/20...					

Details of Certification status



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The screenshot shows the e-Cert Software interface for user Gerriets Frank. The main window displays a guideline configuration for 'Soil & Tissue Samples'. The left sidebar shows a tree view of the guideline structure, with 'Soil & Tissue Samples' highlighted and circled in red. The main area shows the following details:

- Code:** 1.1
- Revision:** EN-GB
- Name:** Soil & Tissue Samples
- Inspection point:** Have Soil or Tissue Samples been sent for Testing? You could add questions whatever you want
- Description:** Reference NOP 5.4
- Entering duty:**
- Type of criteria:** Must criteria
- Level:** [Empty field]

At the bottom, there is a table for 'Result' with columns 'Yes/no' and 'Result':

Yes/no	Result
<input checked="" type="checkbox"/>	yes
<input checked="" type="checkbox"/>	no
<input type="checkbox"/>	not inspected
<input type="checkbox"/>	not relevant
<input type="checkbox"/>	partly fulfilled
<input type="checkbox"/>	mostly fulfilled
<input type="checkbox"/>	not fulfilled
<input type="checkbox"/>	completely fulfilled

Specific settings:  
ccp, questions,  
mesures, deviation,  
sanctions etc.



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Checklist name: Combined Checklist

Checklist: All farm

Composite Checklist:

- Root
  - All farm || 1.1. Staff
  - All farm || 1.3.1. Site History
    - All farm || 1.3.1.1. Farms and other facilities must be suitable for the intended purpose, maintained in good repair and
    - All farm || 1.3.1.10. The location of all animal pest control measures must be identified on a plan/diagram of the site.
    - All farm || 1.3.1.11. All entry points should be suitably protected to prevent, as far as possible, the ingress of animal
    - All farm || 1.3.1.12. To avoid establishing a breeding ground for pests and disease, farms must be clear of litter and was
    - All farm || 1.3.1.2. A recording system must be established for each unit of production or other area/location to provide
    - All farm || 1.3.1.3. A reference system for each field, yard, plot, livestock building or other area/location used in pro
    - All farm || 1.3.1.4. Where there is a change of site (i.e. crop or livestock enterprise), a risk assessment must be under
    - All farm || 1.3.1.5. A management plan must be developed setting out strategies to minimise all identified risks, such as
    - All farm || 1.3.1.6. The management plan should include planned rotations which are designed to minimise the reliance on
    - All farm || 1.3.1.7. A contingency plan should be established which covers action to be taken in the event of loss of pow
    - All farm || 1.3.1.8. The farm must be responsible for minimising the risk of animal pest infestation in buildings and oth
    - All farm || 1.3.1.9. Detailed records of animal pest control inspections and necessary actions taken must be kept.
  - All farm || 1.3.2. Chemical Storage
  - All farm || 1.5. Machinery and Equipment
  - All farm || 1.6.1.2. Identification of Waste and Pollutants
    - All farm || 1.6.1.2.1. Do all farms have a written Farm Waste Management Plan to prevent the contamination of the air, soil
    - All farm || 1.6.1.2.2. Are all possible waste products, such as paper, cardboard, plastic, oil, etc. identified in all area
    - All farm || 1.6.1.2.3. Are potential sources of pollution, such as chemicals (including sheep-dip), oil, fuel, light, noise

Compilation of composite checklists with individual chapters, sequence ...

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- Web based application
- single checklist (standard)
- Developed for EurepGAP option 2 (group certification)
  - inspection
  - certification
  - analysis

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The screenshot shows the ControlNet software interface. The browser address bar indicates the URL: <http://www.controlneturepgap.demo.intact.cc/controlnet.aspx>. The interface features a navigation menu on the left with the following items: ONLINE, master data, assignment of audits, commission, archive, farm overview, certification bod, statistics, control points, deviation/measu, sanctions, check list, points and deviation, auditor, analysis, season, overview, administration, checklist, generator, season, and amistration. The main content area displays a list of control points, including:

ID	Description	Status	Action
851	Is application of pesticide in compliance to OSHA 1994 (USECHH 2000)? Italienisch:	Major r	neue Abw.
852	Are pesticide application records with the required information kept and maintained Italienisch:	Major r	neue Abw.
852	Is information available on REI and PHI for all pesticides used on the estate? Italienisch:	Major r	neue Abw.
852	Is there documented evidence to show and PHT is being observed through use Italienisch:	Major r	neue Abw.

Control points according to GAP protocols for oil palm

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The screenshot shows a web browser window with the URL `http://www.controlneteurepgap.demo.intact.cc/controlnet.aspx`. The application interface includes a navigation menu on the left with options like 'master data', 'audits', and 'assignment of audits'. The main content area is titled 'Eingeteilte Audits bearbeiten' and contains a form with the following fields:

- Name:
- Gen-Betr. Nr.:
- Verband:
- Ort:
- Auditor:
- Auditsaison:
- Fällig:
- Auditart:
- Treffer / Seite:

Below the form is a table with columns: Coop Nr, Farm Nr, Eur Nr, Name, Ort, History, Saison, Auditart, Auditor. At the bottom, there is a section 'Markierte Aufträge bearbeiten:' with a dropdown menu and a button labeled 'Aufträge'.

Assignment of audits according to specific settings

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**ControlNet™**  
**EUREPGAP**

**ONLINE**

- master data
- assignment of audits
- commission
- archive
- farm overview
- certification body
- statistics
- control points
- deviation/measure sanctions
- check list points and deviation
- auditor analysis
- season overview
- administration
- change password
- log out

Statistik: Audit points

Cooperative: All Auditor: All

Audit type: All Audit season: 2006

Eurepgap fulfilled: All Chapter: All

Criteria: All Result: Yes

Display: All

No.	Chapter	Audit point	Type	Total No.	%	Diagram
8.821.1	CROP PROTE	Is there estate aware of the restrictions and is there a	Should	2	2	100.00
8.84.21	CROP PROTE	Is there evidence to show the use of appropriate	Major	2	2	100.00
5.53.11	SOIL MANAG	Any documented guidelines by Company's agricultural	Major	2	2	100.00
5.51.12	SOIL MANAG	Any records of soil analysis for heavy metals recorded?	Should	2	2	100.00
4.41.31	SITE HISTO	Any risk assessment undertaken and recorded?	Major	2	2	100.00
6.65.41	FERTILIZER	Are hazards and risk area clearly indicated in the	Minor	2	2	100.00
8.81.12	CROP PROTE	Are all crop protection products (CPP) documented and	Major	2	2	100.00
4.41.12	SITE HISTO	Are any soil analysis carried out for heavy metals?	Should	2	2	100.00
5.54.11	SOIL MANAG	Are application records per hectare / per palm	Major	2	2	100.00
4.41.51	SITE HISTO	Are corrective action plans in place?	Minor	2	2	100.00
3.32.11	PLANTING M	Are culling rejects recorded and where?	Major	2	2	100.00
2.2.24	RECORD KEE	Are effective corrective actions documented and taken	Minor	2	2	100.00
6.65.24	FERTILIZER	Are Fertilisers stored in a clean and dry area?	Minor	2	2	100.00
6.65.23	FERTILIZER	Are Fertilisers stored in a covered area?	Minor	2	2	100.00
6.65.31	FERTILIZER	Are fertilisers stored in an appropriate manner which				
6.65.22	FERTILIZER	Are fertilisers stored separately from crop protecti				
6.65.21	FERTILIZER	Are fertilizers stored separately from nursery				
8.85.21	CROP PROTE	Are pesticide application records with the				
3.32.22	PLANTING M	Are pesticides used that do not confirm				
6.63.21	FERTILIZER	Are previous application records kept fo				
7.72.11	IRRIGATION	Are proper records kept and maintained				
7.71.22	IRRIGATION	Are rain gauges kept at nursery and rain				

Analysis on base of the critical control points

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## 2. Documentation of primary production

- Documentation of primary production is a major requirement in the most agriculture schemes such as EurepGAP, GAP, Integrated Production (IP), Organic etc.
- IT systems facilitate the production level (no or less paper work)
- IT systems can analyze the data and generate action plans on the PMO level
  - Training
  - Research
  - Quality assurance
  - Efficiency
  - Benchmarking

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- Easy structured companies (producer marketing organizations (PMO), labeling organizations etc.)
- Single-item-products
- Additional information of the primary production (fields, livestock, crop rotation, off-farm-input (fertilizer, pesticides, seed, feed, drugs etc.))
- Sourcing tool (e.g. available amounts of goods)
- Marketing tool (visible information at the POS)
- Risk assessment/traceability tool

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master data positive lists log in options EN

**field section**

business fields **field section** equipment planning fertilisation action Maßnahmen Übersicht soil samples Pflege Zählung Audit

search field section field section year of vegetation

field: ST.NIKOLAUS Genossenschafts-Code: 1  
 Bezeichnung Abschnitt: ST.NIKOLAUS 1 Interner Code: -1

crop: Apfel tree shape: Spindel  
 cultivar: Golden Delicious irrigation: Normal  
 clone: KLON B planting date: 01.01.1996  
 document: M9  EU Pflanzenpass Dokument Upload

no. of trees: 120  
 distance in row: 0.9 Meter distance between rows: 3 Meter  
 no. of multiple rows: 0 distance multiple rows: 0 Meter  
 net acreage: 324 m2 total acreage: 324 m2 Genutzter Anteil: 0 %

remark: section status: Ertr

Detailed information about production (field, crop, species, etc.)

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Application data

Plant protection and fertiliser products

Acreage selection

**Calculation**

### Calculated quantities

Product name	Dose	Amount	Masurement
Example product 1	11.00	0.16	l
Example product 2	30.00	0.43	l
Example product 3	20.00	286.00	ml/hl

Concentration:  Brühaufwand:  hl

Overview	Product	Limitation
<input checked="" type="checkbox"/> Meadow section		
<input checked="" type="checkbox"/> Example meadow sect. 1		
<input checked="" type="checkbox"/> Products		
<input checked="" type="checkbox"/> Example product 1	Example product 1	only after rain
<input checked="" type="checkbox"/> Example product 3	Example product 3	not during flight of bees
<input checked="" type="checkbox"/> Active Components		
<input checked="" type="checkbox"/> Benomyl		
<input checked="" type="checkbox"/> Carbendazim		
<input checked="" type="checkbox"/> Fludioxonil		
<input checked="" type="checkbox"/> Group of active components		
<input checked="" type="checkbox"/> Anilino-Pyrimidin		
<input checked="" type="checkbox"/> Anilino-Pyrimidin		

Meadow Sections:

Name	Broth amount	Calc. broth am.	Waiting period
Example meadow 1 sect 1	3.60	3.60	0
Example meadow 1 sect 2	0.80	0.80	0
Example meadow 1 sect 3	1.40	1.40	0
Example meadow 2 sect 1	1.00	1.00	0
Example meadow 2 sect 2	2.60	2.60	0
Example meadow 2 sect 3	4.90	4.90	0

Detailed information about applications (field, active component, concentration etc.)

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The screenshot shows a web browser window displaying the 'frutura' website. The page is titled 'Baumgartner Johanna' and provides detailed information about a producer. The left sidebar contains navigation links such as 'Das Qualitäts-zwetschken Programm', 'Qualitäts-parameter', 'Rückverfolg-barkeit', 'Sorten', 'Zwetschken-anbau', 'Die gesunde Zwetschke', 'SPAR Filialfinder', 'Bauern-Datenbank', and 'for kids'. The main content area includes contact information, a photo gallery, and a table of orchards.

**Baumgartner Johanna** [Neue Suche](#)

Neudauberg 197, 8292 Neudau  
Bezirk Hartberg, Steiermark  
Telefon 03326/53171  
Telefon 03326/53171

**Fotogalerie**

   
Baumgartner Josef u. Johanna Neudau

**Bewirtschaftete Obstflächen**

Obstfläche gesamt 15000  
Zwetschkenfläche: 5500

**Alle Zwetschkenanlagen**

Bezeichnung	Pflanzjahr	Sorte	Bäume	Gesamtfläche
Hausgarten	1995	Bosnische (Fellenberg)	50	1.500 m <sup>2</sup>
Hausgarten	2000	Cacaks's Schöne	150	2.500 m <sup>2</sup>
Heschmannsgarten	2002	Flena	60	500 m <sup>2</sup>

Data can be used for marketing activities addressing the consumer or the buying company

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### 3. Traceability across production levels

- The ability to follow a certain LOT or charge no. from a certain farm to a collector, to a mill, to a certain product and back gives you the power of fast and sharp crises management
- Information about the origin of a product can be announced to the consumer (or NGOs). The existence of a proper traceability system normally avoids further questions in detail
- Trust, confidence and strong relationships can be generated along the chain of custody between all partners

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- Complex chain of custody (multiple trading/processing stages)
- Single and multi item products
- High-level IT-System which needs ongoing resources
- Company, association, PMO with market power
- Active security at the interfaces between certification systems through plausibility checks regarding the amount and quality of the traded goods
- Interface to existing certification software tools

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Stammdaten Meldungen Tracy Login Verwaltung DE-DE

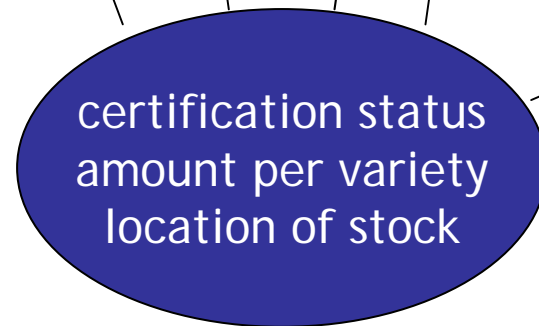
**Händler Sonnenschein Bioprodukte - Vertragsprodukte**

Lagerstelle Mandant **Verträge** Anlieferung Einlagerung Umlagerung Auslagerung Inventur Bestand Lagerjournal

Vertragssuche Vertrag **Vertragsanlieferung Produkte** Vertragsanlieferung

Vertrags Nr.: 1484 Landwirt: Huber Josef (2273, Rottweilsdorferstraße 40)  
 Händler: Sonnenschein Bioprodukt Kontrollstelle: CertPlus

Produkt	Programm	Status QP	Vertragsmenge kg	Freigegeben kg	Geliefert	Lagerstelle	Status
Roggen	Bio	Bio A	10000			Sonnenschein Lagerstelle	Unterzeichnet
Weizen	Bio	Bio A	15000			Sonnenschein Lagerstelle	Unterzeichnet



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Stammdaten Meldungen Tracy Login Verwaltung DE-DE

**Händler Sonnenschein Bioproducte - Anlieferung Suche**

Händler Vertrag Lagerstellen **Anlieferung** Einlagerung Umlagerung Auslagerung Verrechnung

**Anlieferung** Vertragsanlieferung

Landwirt:  Händler: <Alle> Lagerstelle: Bio Mühle Betriebs G Produkt: <Alle>

Datum von: 01.01.2005 Datum bis: 31.12.2005

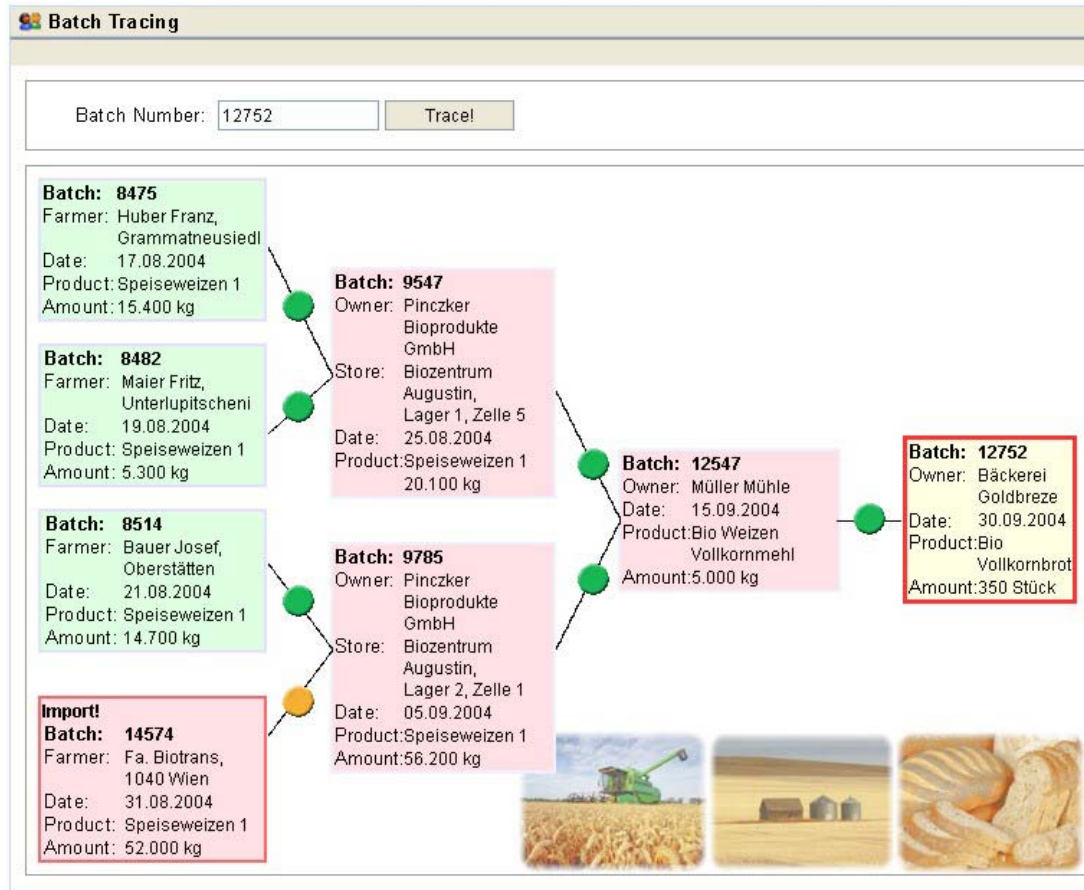
	Datum	ÜS-Nr.	Händler	Landwirt	Lagerstelle	Produkt	Programmstatus	Qualitätsstufe	Nettomenge	Status
<input type="checkbox"/>	27.07.2005	US2285	Sonnensc...	Bader Rudolf (7372 Draßmar...	Bio Mühle Betrie...	Weizen	Bio A	Speiseweizen 1	9500,0000	Eingelagert
<input type="checkbox"/>	26.04.2005	US2251	Sonnensc...	Barenits Mathilde (7361 Kroa...	Bio Mühle Betrie...	Roggen	Bio A	Speiseroggen	11200,0000	Eingelagert
<input type="checkbox"/>	27.02.2005	US2240	Sonnensc...	Gamsenjager Jonatan (7435 ...	Bio Mühle Betrie...	Roggen	Bio U	Futterroggen 2	7560,0000	Angeliefert
<input type="checkbox"/>	21.02.2005	US2236	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Mais	Bio A	Speisemais	10708,0000	Eingelagert
<input type="checkbox"/>	28.04.2005	US2255	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Sojabohne	Bio A	Speisesojabohne	2050,0000	Eingelagert
<input type="checkbox"/>	15.06.2005	US2262	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Weizen	Bio A	Speiseweizen 1	2802,0000	Eingelagert
<input type="checkbox"/>	21.02.2005	US2238	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Weizen	Bio A	Speiseweizen 1	4670,0000	Eingelagert
<input type="checkbox"/>	25.05.2005	US2260	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Weizen	Bio A	Speiseweizen 1	2000,0000	Eingelagert
<input type="checkbox"/>	28.02.2005	US2241	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Weizen	Bio A	Speiseweizen 1	16000,0000	Eingelagert
<input type="checkbox"/>	28.04.2005	US2256	Sonnensc...	Huber Josef (2273 Hohenau)	Bio Mühle Betrie...	Weizen	Bio A	Speiseweizen 1	10000,0000	Eingelagert

[1 - 1] Treffer: 10

intake-journal  
each lot is documented  
and may be traced  
back to the farm

## Overview

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## Conclusion

- Company strategies as well as legal requirements are more and more focused on a broad understanding of quality management.
- Company's have to find an active role regarding quality management to strengthen their position towards the consuming level (buying companies, consumer, NGOs, authorities)
- Proper systems for traceability, certification and quality management are available and affordable.
- The Malaysian palm oil industry plays the leading role regarding product quality and will play the leading role in the future if it fulfils the expectations (consumer) and requirements (authorities) and increase the efficiency of the production!

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**For further information see or contact**

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